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ABSTRACT

Conclusions derived from drawing research indicate that young children can be trained to see and respond to the distinctions of their observation and that these distinctions can enrich their drawing experiences. These distinctions include spatial information obtained from observation. Three basic factors influence young children's spatial representation: cognition (what is known about the objects); perception (what is seen); and graphic production (mark making). Although children's drawings are usually interpreted in psychological terms, drawings can be an important education tool. Drawing activities in art education include drawing from memory, drawing from imagination, and drawing from observation. Art educators can make a claim for the inclusion of perceptual training for young children. Coaching preschoolers to attend to the visual cues of size, shape, direction, and location will aid learning and memory. (MM)

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**The Significance of Young Children's Visual Skills
in Graphic Depiction of Spatial Representation:
Testimony from Two Drawing Researchers**

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Art: Art in Early Childhood Education Conference**, held September
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Conclusions derived from experimental drawing research indicates that young children can be trained to see and respond to distinctions of their observation and that these distinctions can enrich their drawing experiences. These distinctions include features observed about spatial information.

As educators and researchers, the educational value of drawing has been expressed by Early Childhood researchers such as C. Seefeldt (1987) who states that drawing is an important educational activity that can help young children learn and remember.

The purpose of our presentation is to discuss how young children use their visual skills in spatial representation of observational drawing.

When analyzed by various authorities, children's drawings are usually interpreted in psychological terms; i.e., either as an indication of personality or cognitive development. The present study focusses on the cognitive perspective of children's drawings.

When we want to draw on a piece of paper, the flat picture plane serves well to represent the two-dimensional view. We can use the vertical dimension of the picture plane to correspond to the up-down aspects of an object, and use the horizontal dimension to correspond to the right-left aspects. For instance, a human figure can be drawn on a piece of paper easily, with head at top and feet to the bottom, then right arm and left arm. However, a problem arises with the representation of more than one plane. For example, we want to draw two human figures, one behind the other, then how can we represent the near-far space on a two-dimensional

paper?

For adults, the most commonly used and considered most realistic way to draw this is to use partial occlusion to represent the depth relationship between two objects. But, younger children sometimes separate these two objects horizontally or vertically, or draw the occluded part resulting in transparency.

Hagen (1976) indicates that children of the age of 3 are able to understand partial occlusion as a pictorial cue to spatial depth. But, it is observed that children rarely use partial occlusion in their free drawings.

To investigate the phenomena, researchers design stimuli of one object behind the other, and ask children to do observational drawings of "what you can see." In a drawing task, there are three factors that influence children's drawing.

Cognition (what is known about the objects), perception (what we see), and graphic production (markmaking) are three basic factors that influence young children's spatial representation. In other words, the information presented in a drawing seems to be determined by these three factors: (1) children's knowledge of the drawing topic itself, (Children know that there are two objects exist.) (2) their attention to and interpretation of information processed through the visual features, (Do they to choose to represent the structure information? or the view-specific information?), and (3) their capacity to produce a drawing showing that shows those features. For instance, perhaps the child wants to show view-specific information, therefore it is necessary that the child be able to use certain drawing strategies to show that

information. Specifically, let us consider the production difficulty of junction line between two overlapping objects and their configuration.

When one object is behind the other, the configuration of these two overlapping objects are influenced by the junction line which separates these two objects. For example, this figure is partially occluded by this piece of paper. The junction line between these two objects are a simple straight line. But, if the nearer object, shorter and narrower than the farther form, cannot occlude the farther object with a simple junction line, obviously the configuration of these two objects becomes more complex and difficult to draw. The strategy to draw this configuration would be to draw the front object first, then draw the outline of the rear object to accommodate to the front object's outline. A child may choose to represent the view-specific information. However, it is possible that because a child does not know the sequencing and cannot handle this drawing strategy, the final drawing cannot show that information. Experimental findings indicate that the stimuli effect did significantly influence young children's use of partial occlusion.

When experimental drawing researchers analyze drawings generated from young children's observations, they classify the drawings to make inferences about what kind of information or representation is conveyed by the child. A great deal of the time, researchers ask "what does the drawing symbolize?" The basis of this inquiry is the assumption that young children's drawings represent or denote ideas or conceptual information such as a

subject, topic, or theme. The focus of drawing analysis based on symbolization usually does not include the analysis of spatial representation in the sense of pictorial depth. A young nonrepresentational drawer around the age of three years may experiment with form in drawing without intentions of representing the spatial relationships between recognizable images. The young child may name the drawing with imparted fanciful meaning. A four- to five-year-old can generally represent isolated images on the pictorial plane that are recognizable to the adult viewer as a reference to the concrete world but not indicate any spatial relationship or pictorial depth between the images in a drawing. From the examples of young children's drawings, we can conclude that symbolism is one important aspect in young children's artmaking. Usually the drawings of very young children are classified as symbolic or denoting ideas. These examples can also be classified as "non-spatial" by the standards of western pictorial depth features such as overlap, near/ far placement, or other features of diminution. These spatial features are usually not evident in young children's spontaneous, undirected drawings.

We can not dismiss this evidence, yet spontaneous drawing is not the only drawing experiences valued by art curriculum guides for preschoolers. Three types of drawing activities from art education can be categorized as: A) Drawing from memory B) Drawing from imagination C) Drawing from Observation.

As researchers in art education, we are interested in examining whether encouraging young children to use their observational skills in drawing is worthwhile in preschool. From

several sources on art curriculum for young children, there are indications that observational drawing activities are valuable in the preschool setting. Curriculum authors include instructional strategies on how to encourage preschoolers to use their perceptual skills of observation to discriminate details of contour, size, shape, and arrangement to enrich their drawing experiences (L. Chapman, 1978; B. Herberholtz and L. Hanson, 1990; C. Colbert and M. Taunton, 1990).

Experimental evidence can aid in the examination of the possibilities for learning from observational drawing. Preschoolers have been given perceptual cues in the experimental setting by varying instruction, objects, or arrangement contrasts. Although young children will not show their own viewpoint, they will distinguish spatial relationships between objects observed and manipulated. Such evidence suggests that the historical premise that young children are conceptually immature should be reconsidered. This premise is based on drawing in unfavorable circumstances where visual cues are minimal or not compared to manipulations where visual cues are varied. This historical view indicates that young children are not capable of using their observations to differentiate in drawing.

The deficiencies of young children's drawing skills should not be the focus of art educators. Ideas for enriching drawing experiences can be derived from consideration of observational drawing with young children that does not deprive but extends visual cues for observation.

From many sources that examine young children's observational

and drawing skills, we can conclude that under favorable circumstances even preschoolers can create spatially complex drawings which go beyond analysis based on conceptual immaturity. A study by P. Light and E. MacIntosh (1980) examined the conflict between conceptual and visual conflict of objects observed by six-year-olds. The researchers had young children observe a small toy house placed in or behind a clear glass beaker. This manipulation resulted in the children drawing their own viewpoint only when the house was placed inside the beaker. When shown the house behind the beaker, the children usually expressed the relationship by separating the farther object in a vertical or horizontal arrangement. In either inside or behind view, the depiction would result in the house enclosed by the contour of the beaker. The researchers suggested that the functional meaning of the beaker as a container cued the young children to only depict the house enclosed by the beaker in the inside arrangement because the behind arrangement resulted in a conflict between what was known about the arrangement and the visual outcome of depiction. From this study, we can understand that young children are cued by the meaning of objects observed. A favorite objects will be depicted in a different manner than a more unfamiliar object.

In another manipulation with objects, Davis (1984) attempted to enhance perceptual cues for children four- to six-years by contrasting the arrangement of two identical handled cups. One cup was placed in the position of handle to the side while the other cup was placed with handle to the back of the cup. In comparison, one group of children were only given one cup to view. The

children who were given contrasting cups to observe were able to depict their perceptual distinction. The children deprived of this information generally showed a stereotypical handle on the side even when the handle was not in their view. The researcher concluded that the contrasting perceptual cue manipulation resulted in even the youngest children depicting the arrangement differences of their own viewpoint.

Young children will change their drawing strategies to express their observation in an indirect yet equally meaningful way. R. Dorethy (1973) used an animated cartoon to help young primary age children understand concepts of drawing pictorial space by showing forward and backward stop action, then discussing the position of images, overlapping form, and placement of images on the screen. Results of this study indicate that the perceptual training sessions aided children in later imaginary drawings including the expression of pictorial space.

The dimensions of perceiving space visually creates a challenge for preschoolers engaged in observational drawing. These challenges are deliberated by R. Arnheim (1974) who enumerates the complexity of seeing and drawing interaction. As children draw, they are confronted by visual information that are hierarchial in comprehension. They are challenged to select and respond to this information in their drawings. They must respond to dimensions of form (width and height); variation of shape, size, direction, and location. The young child must comprehend and respond to the realization that objects extend in space and can be arranged in an infinite number of ways. These dimensions pose a great challenge

for preschoolers.

Freeman (1980) presented many examples of performance biases and planning difficulties that have effects on the final form of a finished drawing. For example, Freeman has argued that: (1) An end-anchoring effect may explain why three- and four-year-old children are more likely to draw the head and legs than the arms and trunk in their drawing of a human figure (2) Most young children draw a human figure with a head out-of-proportionally too big. Researchers usually state that this drawing characteristic is because children consider the head as the most important part of the figure and exaggerate the size. However, Freeman proposed that children normally draw the head before the body, if children draw the head too big and fail to leave sufficient space for the trunk and the legs, then the body trunk and legs have to be squeezed to fit into the paper. Therefore, according to Freeman, it is the result of planning difficulty. (3) Children, perhaps uncertain of their fine motor control, enlarge the outline of the head to make sure that there will be enough space to show the eyes, nose, and mouth.

Examination of the drawings from our experiments, we also see many examples of planning and sequencing difficulty in the drawing process. For example, for near-far relationship, if children do not know to draw view-specific information, usually they will separate the objects vertically by placing the farther one above the near one. But, in this drawing, the house is lower. When we observed the drawing sequence, we found that most children draw the house first, maybe because the object is more appealing or solid to them. In this case, the child may intend to use the edge of the

paper as the baseline, and placed the house close to the bottom, then draw the pattern wall. Maybe the child does not understand view-specific or simply doesn't want to ruin the house drawing. Then, the child chooses to separate these two objects and place the pattern wall above the house. This kind of reversed placement of vertical separation is rarely seen in experiment when we ask children to draw two opaque objects.

Through all these discussion, we want to indicate that drawing process is very complicated. The final product of a child's drawing is not necessarily to represent the child's conception or perception of this world. Obviously, children know much more than they draw. Their drawings are not the reflection of their conception.

From the evidence of visual challenges in observational drawing, art educators can make a claim for the inclusion of perceptual training for young children. R.A. Salome and D. Reeves (1972) remind the art educator that perceptual training is not necessarily a natural occurring by-product of art activities. Perceptual training should be included in objectives of art teaching.

According to traditional developmental psychologists, such as Piaget, as children grow older, their cognitive abilities will automatically be advanced and result in more developmentally advanced mental images. These images will be translated into "better" pictures. Therefore, the conclusion of this approach is that no teaching in drawing is necessary.

But, there is an alternative view-point which is proposed by

Vygotsky (1978) who suggests that the learning process should be ahead of the developmental process and this sequence results in "zones of proximal development."

It is observed that children at these ages rarely use partial occlusion or view-specific representation in their free drawings. However, the experimental results indicate that when the task demand is specified and salient, most children are able to solve the visual problem successfully. Taking Vygotsky's proposal of the zone of proximal development, children at these ages under teacher guidance are ready to take the learning process of using partial occlusion or view-specific for space representation. Once this process is internalized, as Vygotsky suggests, the skill becomes part of the child's independent developmental achievement. Therefore, we may consider including the lesson of observational drawing in the curriculum to help our youngsters to understand the strategies of spatial representation, and help them to advance into another developmental stage.

In conclusion, we believe that coaching preschoolers to attend to the visual cues of size, shape, direction, and location will aid learning and memory. Enhancing the meaning of observational drawing tasks can enrich their drawing experiences and lead to a visual store for later imaginative art experiences.

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